

**Rosenberger®**



# ***Automotive Connectors***

***FAKRA-RF Connectors***



Rosenberger Hochfrequenztechnik was founded in 1958 and ranks among the leading manufacturers of high-frequency coaxial connectors worldwide today. In addition, a comprehensive program of accessories such as adaptors, attenuators, cables and test accessories is also available. With production facilities, sales offices and exclusive agencies in Europe, Asia and the Americas, we are represented locally throughout the world.

Innovative products of excellent quality play a key role in many high-tech applications – for example in telecom, test and measurement or automotive applications. Rosenberger is certified to **ISO/TS 16949**.

Rosenberger FAKRA\*-RF connectors have been especially designed to fulfill the tough requirements of the automotive industry and are specified to the FAKRA standard. A comprehensive coding system offers 11 mechanical and colored codings for modern automotive applications, e.g. GPS, keyless entry or GSM mobile radio.

The catalog Automotive Connectors lists our wide range of automotive connectors for cable assembly and PCB mounting.

#### New in the catalog:

- PCB connectors for "pin-in-paste"-soldering process
- II. generation of twin connectors.

Connector series such as FME or Mini-UHF that open up further fields of application around the automobile are described in Rosenberger Catalog 1.

We would be pleased to advise you – just contact your Rosenberger partner or your representation.

\* FAKRA = **Fachkreis Automobil**

Rosenberger standard connectors are described in Catalog 1. Precision connectors for test and measurement applications are described in Catalog 2.

Die Rosenberger-Standardsteckverbinder finden Sie im Katalog 1, Präzisionssteckverbinder für Anwendungen in der Messtechnik im Katalog 2.

Die **Rosenberger Hochfrequenztechnik** wurde 1958 gegründet und zählt heute zu den weltweit führenden Herstellern von Hochfrequenz-Koaxialsteckverbindern, ergänzt durch ein umfangreiches Zubehörprogramm wie Adapter, Dämpfungsglieder, Kabel oder Messzubehör. Mit Fertigungsstandorten, Rosenberger-Vertriebsniederlassungen und Generalvertretungen in Europa, Asien und Amerika sind wir weltweit vor Ort vertreten.

Innovative Produkte in hervorragender Qualität von Rosenberger spielen heute eine Schlüsselrolle in vielen High-Tech-Anwendungen – in der Telekommunikation, in der industriellen Messtechnik, in der Kfz-Elektronik. Rosenberger ist zertifiziert nach **ISO/TS 16949**.

Rosenberger FAKRA\*-HF-Steckverbinder wurden speziell für die hohen Anforderungen in der Automobil-Industrie entwickelt und sind spezifiziert nach der FAKRA-Norm. Das ausgereifte Kodierungssystem bietet 11 mechanische und farbliche Kodierungen für moderne Kfz-Anwendungen – wie z.B. GPS, Keyless Entry oder GSM-Mobilfunkstandard.

Der Katalog Automotive Connectors enthält unser umfangreiches Produktspektrum an Kabel- und Leiterplatten-Steckverbindern.

#### Neu im Katalog:

- Leiterplatten-Steckverbinder für „Pin-in-Paste“-Lötverfahren
- Doppel-Steckverbinder der II. Generation.

Steckverbinderreihen wie z.B. FME oder Mini-UHF, die weitere Anwendungsfelder rund ums Auto erschließen, finden Sie im Rosenberger Catalog 1.

Wir beraten Sie gerne – wenden Sie sich an Ihren Rosenberger-Ansprechpartner oder Ihre Vertretung.

\* FAKRA = **Fachkreis Automobil**

<b>Contents</b>		<b>Inhaltsübersicht</b>
Automotive Connectors	3	Automobil-Steckverbinder
Cables/Plating Code	4	Kabel/Oberflächenschlüssel
Number Designation	5	Nummernschlüssel
Specification FAKRA	6	Spezifikationen FAKRA
Coding	7	Kodierung
Cable Jacks	8	Kabel-Kuppler
Cable Plugs	11	Kabel-Stecker
PCB Connectors	14	Leiterplatten-Steckverbinder
Panel Piercing	18	Montage

**Cables**

**Kabel**

Cable Group	Impedance	Cable Type
02	50 Ω	RG 174, RG 316
06	50 Ω	RG 58
M4	50 Ω	RTK 031

**Plating Code**

The used platings of outer and center contacts of Rosenberger connectors can be identified by each part number.

Example:

59 K 13D-102 A4-\* Plating outer contact: nickel (A)

Plating center contact: gold (4)

Standard plating code of FAKRA-RF connectors is A4.

**Oberflächenschlüssel**

Die verwendeten Oberflächen bei Innen- und Außenleiter der Rosenberger-Steckverbinder sind durch die beiden letzten Stellen der jeweiligen Artikel-Bestellnummer definiert.

Beispiel:

59 K 13D-102 A4-\* Oberfläche Außenleiter: Nickel (A)

Oberfläche Innenleiter: Gold (4)

Die Standard-Oberfläche bei FAKRA-HF-Steckverbindern ist A4.

**Standard plating codes of other Rosenberger connectors**

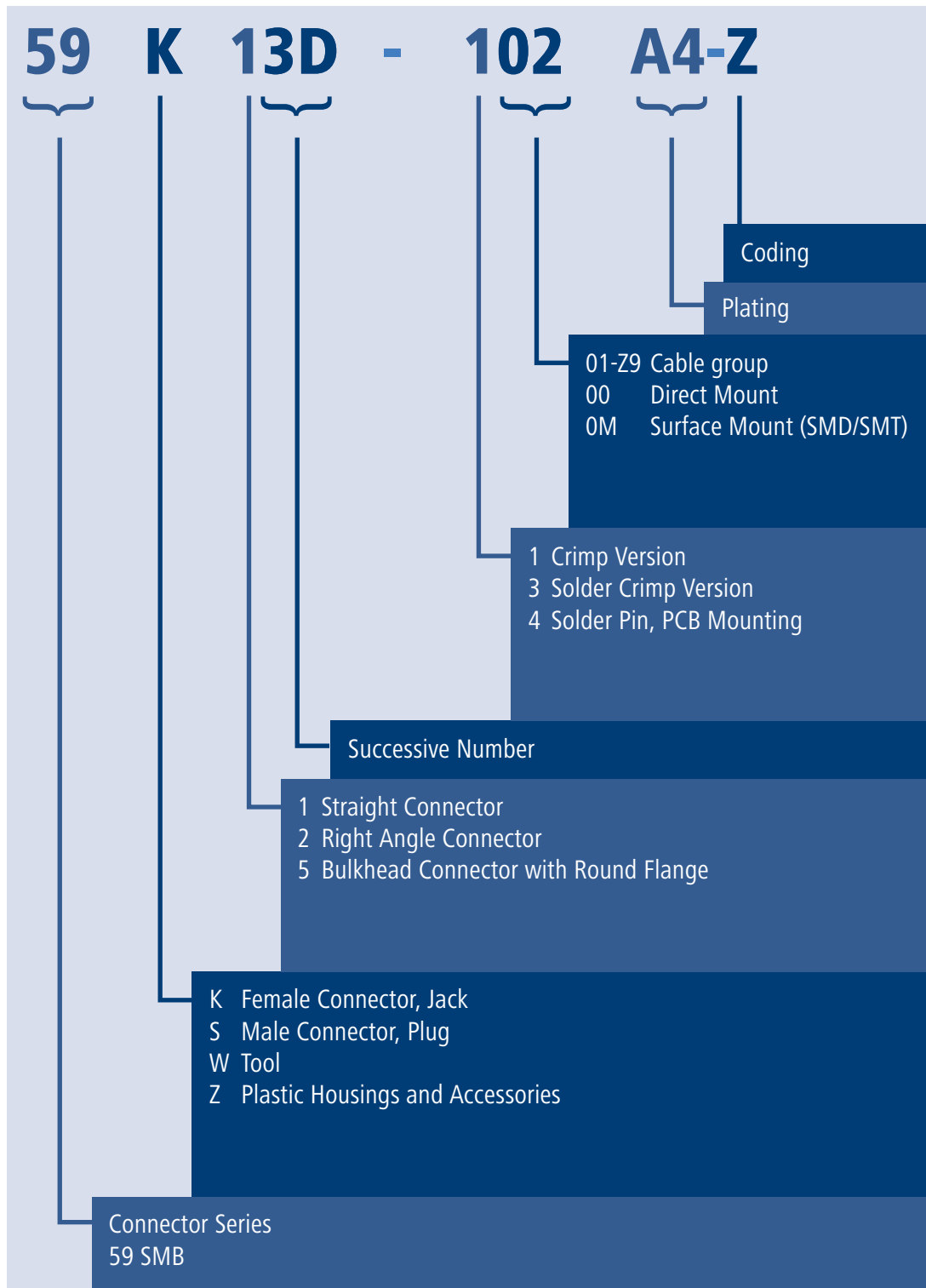
**Die Rosenberger Standard-Oberflächen**

Outer Contact				
A	Nickel	3	µm	Non magnetic
B	Silver	3	µm	
E	Gold	0.80	µm	
F	Gold	0.10	µm	
H	Gold	1.27	µm	
L	PSC	0.15	µm Gold over chem. Nickel	Non magnetic
N	Optalloy, Optargen			Non magnetic
S	Stainless Steel			
T	Tin/Lead	6-8	µm	Non magnetic

Center Contact				
1	Silver	3	µm	Non magnetic
3	Gold	1.27	µm	
4	Gold	0.80	µm	
5	Gold	0.15	µm	Non magnetic

## Number Designation

## Nummernschlüssel



## Specifications of FAKRA RF

## Spezifikationen der FAKRA HF

Electrical characteristics		Elektrische Daten
Characteristic impedance	50 $\Omega$	Wellenwiderstand
Frequency range	DC..6 GHz	Frequenzbereich
Return loss	$\leq -18$ dB	Rückflussdämpfung
Insertion loss max.	$\leq 0.1$ dB @ 4 GHz	Dämpfung
Insulation resistance	1000 M $\Omega$	Isolationswiderstand
Center contact resistance	$\leq 5.0$ m $\Omega$	Übergangswiderstand Innenleiter
Outer contact resistance	$\leq 2.5$ m $\Omega$	Übergangswiderstand Außenleiter
Test voltage	$\leq 750$ V rms (at sea level, 50 Hz)	Prüfspannung
Working voltage	$\leq 335$ V rms (at sea level, 50 Hz)	Betriebsspannung
Working current	$\leq 1.5$ A DC	Betriebsstrom
Screening effectiveness	$> 55$ dB	Schirmung
Mechanical characteristics		Mechanische Daten
Engagement force	25 N max.	Einsteckkraft
Disengagement force	2 N min.	Ausziehkraft
Design according to	DIN 72594 (CECC 22130)	Anschlussdimensionen gemäß
Connecting operations	$\leq 50$	Anzahl Steckzyklen
Plating Version A4 (Standard)		Beschichtungen Version A4 (Standard)
Contact area	Ni 2.0 $\mu$ m min.	Kontaktbereich
Center contact	Au 0.8 $\mu$ m	Innenleiter
Other parts	Ni 2.0 $\mu$ m min.	andere Teile
Solder parts	Au 0.1 $\mu$ m min.	Lötteile
Plating Version E4		Beschichtungen Version E4
Contact area	Au 0.8 $\mu$ m	Kontaktbereich
Center contact	Au 0.8 $\mu$ m	Innenleiter
Other parts	Ni 2.0 $\mu$ m min.	andere Teile
Solder parts	Au 0.1 $\mu$ m min.	Lötteile
Environmental influences		Umgebungseinflüsse
Temperature range	$-40$ °C to/bis $+100$ °C	Temperaturbereich
Solder version	to/bis 200 °C/60 s	Lötteile
Solder version SMD	to/bis 260 °C/20 s	Lötteile SMD
Vibration	MIL-STD-202 Meth. 204/B	Vibration
Humidity	MIL-STD-202 Meth. 106/D	Feuchtigkeit
Shock	MIL-STD-202 Meth. 213/B	Schockfestigkeit
Climatic class according IEC 68	40/100/21	Klimaklasse entsprechend IEC 68
Materials		Materialien
Outer contact	Brass	Außenleiter
Spring ring	CuBe or stainless steel	Federring
Center contact, plug	Brass	Innenleiter, Stecker
Center contact, jack	CuBe	Innenleiter, Kuppler
Insulator	PTFE	Isolator

Plugs, jacks and housings according to FAKRA standards (FAKRA = **Fachkreis** Automobil).  
Steckverbinder und Gehäuse entsprechen der FAKRA-Norm (FAKRA = **Fachkreis** Automobil).

## Coding

## Kodierung

Coding	Jack		Plug		Color/ RAL-Nr.
	Single	Twin	Single	Twin	
A Radio without phantom supply/ Radio ohne Speisespannung					Black/ 9005
B Radio with phantom supply/ Radio mit Speisespannung					White/ 9001
C GPS: telematics <b>or</b> navigation/ GPS: Telematik <b>oder</b> Navigation					Blue/ 5005
D GSM Cellular phone/ GSM Mobiltelefon					Bordeaux- violett/ 4004
E TV1					Green/ 6002
F TV2					Brown/ 8011
G Remote control keyless entry/ Funkfernbedienung ZV (Kessy)					Grey/ 7031
H GPS: telematics <b>and</b> navigation/ GPS: Telematik <b>und</b> Navigation					Violett/ 4003
I Radio controlled parking heating/ Funkfernbedienung Standheizung (SHA)					Beige/ 1001
K Radio with IF/ Radio mit ZF-Ausgang (Antennendiversity)					Curry/ 1027
Z Neutral coding/ Nullkodierung					Waterblue/ 5021

All connectors listed in this catalog are available with the following codings: A, B, C, D, E, F, G, H, I, K, Z

Alle in diesem Katalog aufgeführten Steckverbinder sind in folgenden Kodierungen verfügbar: A, B, C, D, E, F, G, H, I, K, Z

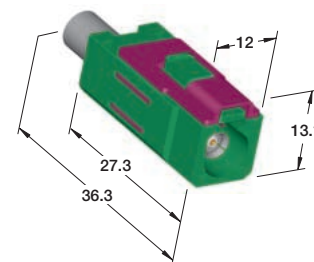
Automotive connectors mounted on PCB

Automobil-Steckverbinder montiert auf Leiterplatte



## Jack

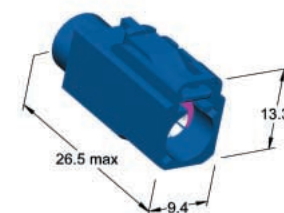
Part Number	Cable	Assembly Instruction
59 K 13A-106 A4-*	RG 58	59 V 001
59 K 13A-102 A4-*	RG 174, RG 316	59 V 001
59 K 13A-1M4 A4-*	RT K 031	59 V 001



## Kuppler

## Jack

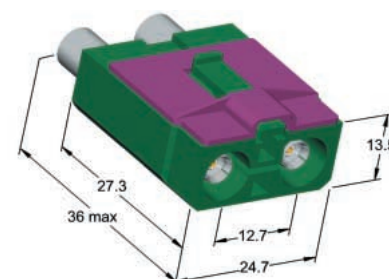
Part Number	Cable	Assembly Instruction	Remarks
59 K 13D-106 A4-*	RG 58	59 V 009	Stamped and formed center contact, tape & reel packaging (500, 5000, 20000 pcs.) II. Generation
59 K 13D-102 A4-*	RG 174	59 V 009	
59 K 13D-1M4 A4-*	RT K 031	59 V 009	
On request: straight jack for water proof systems			
59 K 13F-106 A4-*	RG 58	59 V 002	II. Generation
59 K 13F-1M4 A4-*	RT K 031	59 V 002	II. Generation



## Kuppler

## Twin Jack

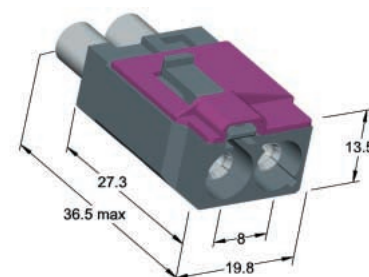
Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 13B-106 A4-*	RG 58	59 V 003	12.7 mm
59 K 13B-102 A4-*	RG 174	59 V 003	12.7 mm
59 K 13B-1M4 A4-*	RT K 031	59 V 003	12.7 mm



## Doppel-Kuppler

## Twin Jack

Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 13C-106 A4-*	RG 58	59 V 003	8.0 mm
59 K 13C-102 A4-*	RG 174	59 V 003	8.0 mm
59 K 13C-1M4 A4-*	RT K 031	59 V 003	8.0 mm



## Doppel-Kuppler

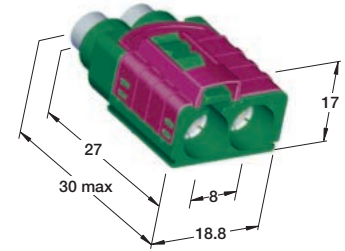
\*) Part number has to be accomplished by codification!  
Die Kodierung ist Teil der Bestellnummer und muss hier eingetragen werden!  
Example for codification **A** / Beispiel für Kodierung **A**: 59 K 23B-106 A4-**A**



## Twin Jack

## Doppel-Kuppler

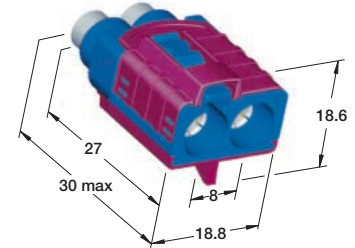
Part Number	Cable	Assembly Instruction	Remarks
59 K 13K-106 A4-*	RG 58	59 V 025	8.0 mm
59 K 13K-102 A4-*	RG 174, RG 316	59 V 025	II. Generation
59 K 13K-1M4 A4-*	RT K 031	59 V 025	



## Twin Jack

## Doppel-Kuppler

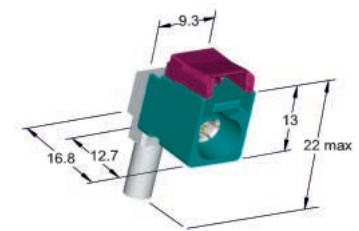
Part Number	Cable	Assembly Instruction	Remarks
59 K 1AK-106 A4-*	RG 58	59 V 026	8.0 mm
59 K 1AK-102 A4-*	RG 174, RG 316	59 V 026	II. Generation
59 K 1AK-1M4 A4-*	RT K 031	59 V 026	With slot positioning clip/ Mit Befestigungsschiene für Halteclip



## Jack, 360° Angle

## Kuppler, 360°-Winkel

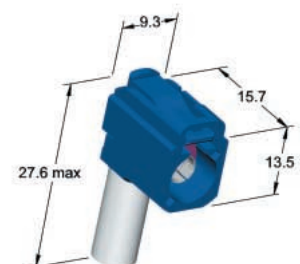
Part Number	Cable	Assembly Instruction
59 K 25A-106 A4-*	RG 58	59 V 014
59 K 25A-102 A4-*	RG 174	59 V 014
59 K 25A-1M4 A4-*	RT K 031	59 V 014



## Jack, 90° Angle

## Kuppler, 90°-Winkel

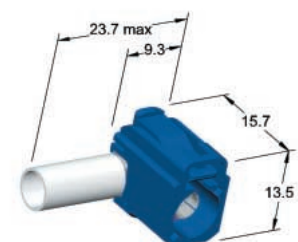
Part Number	Cable	Assembly Instruction
59 K 23B-106 A4-*	RG 58	59 V 007
59 K 23B-102 A4-*	RG 174	59 V 007
59 K 23B-1M4 A4-*	RT K 031	59 V 007
On request: right-angle jack for water proof systems		



## Jack, 90° Angle, Cable Separation Right

## Kuppler, 90°-Winkel, Kabelabgang rechts

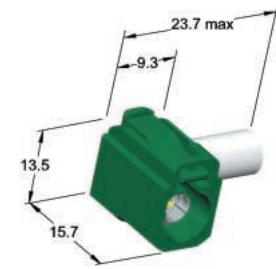
Part Number	Cable	Assembly Instruction
59 K 23C-106 A4-*	RG 58	59 V 007
59 K 23C-102 A4-*	RG 174	59 V 007
59 K 23C-1M4 A4-*	RT K 031	59 V 007



## Jack, 90° Angle, Cable Separation Left

Part Number	Cable	Assembly Instruction
59 K 23D-106 A4-*	RG 58	59 V 007
59 K 23D-102 A4-*	RG 174	59 V 007
59 K 23D-1M4 A4-*	RT K 031	59 V 007

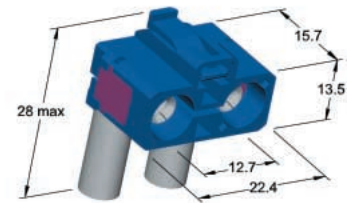
## Kuppler, 90°-Winkel, Kabelabgang links



## Twin Jack, 90° Angle

Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 23E-106 A4-*	RG 58	59 V 005	12.7 mm
59 K 23E-102 A4-*	RG 174	59 V 005	12.7 mm
59 K 23E-1M4 A4-*	RT K 031	59 V 005	12.7 mm

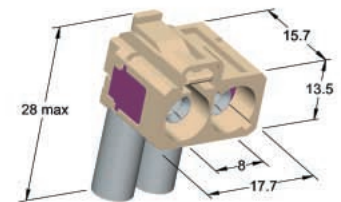
## Doppel-Kuppler, 90°-Winkel



## Twin Jack, 90° Angle

Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 23F-106 A4-*	RG 58	59 V 005	8.0 mm
59 K 23F-102 A4-*	RG 174	59 V 005	8.0 mm
59 K 23F-1M4 A4-*	RT K 031	59 V 005	8.0 mm

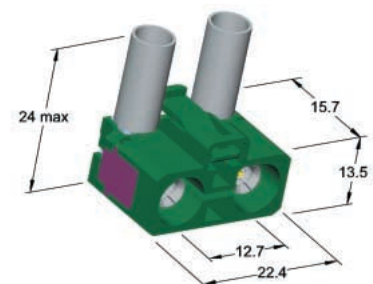
## Doppel-Kuppler, 90°-Winkel



## Twin Jack, 90° Angle

Part Number	Cable	Assembly Instruction	Distance of contacts
59 K 23G-106 A4-*	RG 58	59 V 005	12.7 mm
59 K 23G-102 A4-*	RG 174	59 V 005	12.7 mm
59 K 23G-1M4 A4-*	RT K 031	59 V 005	12.7 mm

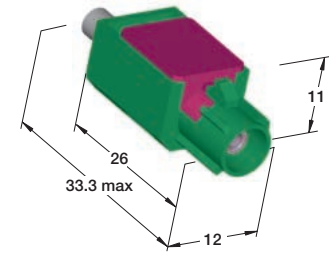
## Doppel-Kuppler, 90°-Winkel



Plug

Stecker

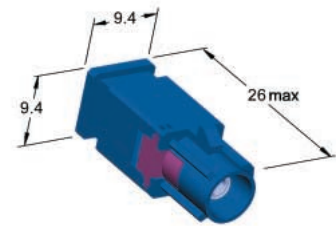
Part Number	Cable	Assembly Instruction
59 S 10A-106 A4-*	RG 58	59 V 004
59 S 10A-102 A4-*	RG 174, RG 316	59 V 004
59 S 10A-1M4 A4-*	RT K 031	59 V 004



Plug

Stecker

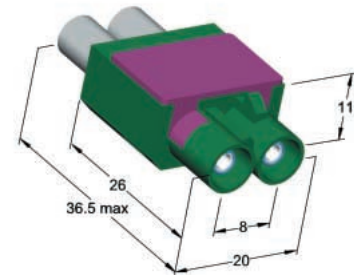
Part Number	Cable	Assembly Instruction	Remarks
59 S 10L-106 A4-*	RG 58	59 V 016	Stamped and formed center contact, tape & reel packaging (500, 5000, 20000 pcs.) II. Generation
59 S 10L-102 A4-*	RG 174	59 V 016	
59 S 10L-1M4 A4-*	RT K 031	59 V 016	
59 S 10E-106 A4-*	RG 58	59 V 010	II. Generation
59 S 10E-102 A4-*	RG 174	59 V 010	II. Generation
59 S 10E-1M4 A4-*	RT K 031	59 V 010	II. Generation



Twin Plug

Doppel-Stecker

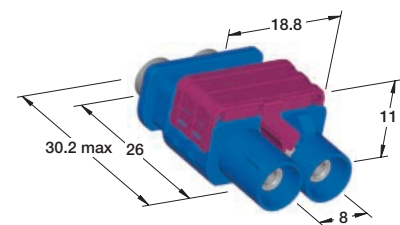
Part Number	Cable	Assembly Instruction	Distance of contacts
59 S 10D-106 A4-*	RG 58	59 V 006	8.0 mm
59 S 10D-102 A4-*	RG 174	59 V 006	8.0 mm
59 S 10D-1M4 A4-*	RT K 031	59 V 006	8.0 mm



Twin Plug

Doppel-Stecker

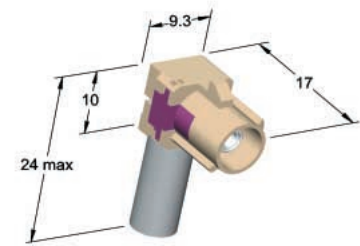
Part Number	Cable	Assembly Instruction	Remarks
59 S 10M-106 A4-*	RG 58	59 V 028	8.0 mm
59 S 10M-102 A4-*	RG 174, RG 316	59 V 028	II. Generation
59 S 10M-1M4 A4-*	RT K 031	59 V 028	



## Plug, 90° Angle

Part Number	Cable	Assembly Instruction
59 S 20A-106 A4-*	RG 58	59 V 011
59 S 20A-102 A4-*	RG 174	59 V 011
59 S 20A-1M4 A4-*	RT K 031	59 V 011

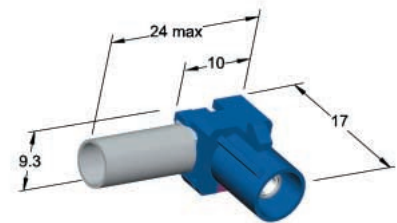
## Stecker, 90°-Winkel



## Plug, 90° Angle, Cable Separation Right

Part Number	Cable	Assembly Instruction
59 S 20E-106 A4-*	RG 58	59 V 011
59 S 20E-102 A4-*	RG 174	59 V 011
59 S 20E-1M4 A4-*	RT K 031	59 V 011

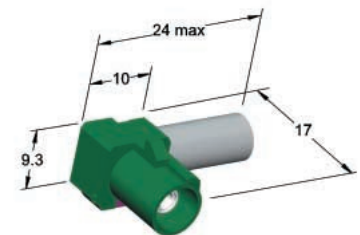
## Stecker, 90°-Winkel, Kabelabgang rechts



## Plug, 90° Angle, Cable Separation Left

Part Number	Cable	Assembly Instruction
59 S 20F-106 A4-*	RG 58	59 V 011
59 S 20F-102 A4-*	RG 174	59 V 011
59 S 20F-1M4 A4-*	RT K 031	59 V 011

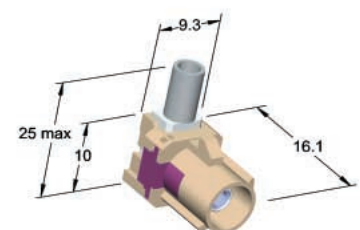
## Stecker, 90°-Winkel, Kabelabgang links



## Plug, 90° Angle

Part Number	Cable	Assembly Instruction
59 S 20C-106 A4-*	RG 58	59 V 011
59 S 20C-102 A4-*	RG 174	59 V 011
59 S 20C-1M4 A4-*	RT K 031	59 V 011

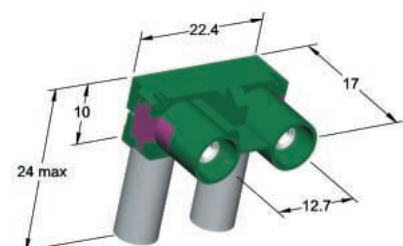
## Stecker, 90°-Winkel



## Twin Plug, 90° Angle

Part Number	Cable	Assembly Instruction	Distance of contacts
59 S 20B-106 A4-*	RG 58	59 V 008	12.7 mm
59 S 20B-102 A4-*	RG 174	59 V 008	12.7 mm
59 S 20B-1M4 A4-*	RT K 031	59 V 008	12.7 mm

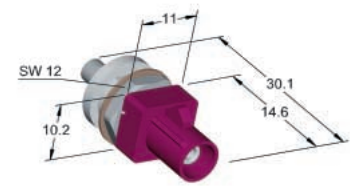
## Doppel-Stecker, 90°-Winkel



## Bulkhead Plug

Part Number	Cable	Assembly Instruction	Panel Piercing
59 S 50A-102 A4-*	RG 174	59 G 7	B 148

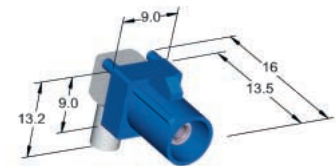
## Gehäusestecker



## Bulkhead Plug, 90° Angle

Part Number	Cable	Assembly Instruction	Panel Piercing	Remarks
59 S 20D-301 A4-*	RG 178	59 F 7	B 129	Recommended panel thickness $1 \pm 0.05$ mm

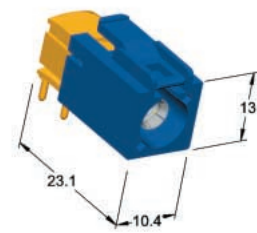
## Gehäusestecker, 90°-Winkel



## Jack, 90° Angle

## Kuppler, 90°-Winkel

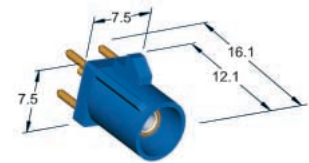
Part Number	Panel Piercing	Remarks
59 K 23A-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwallöttechnik



## Plug

## Stecker

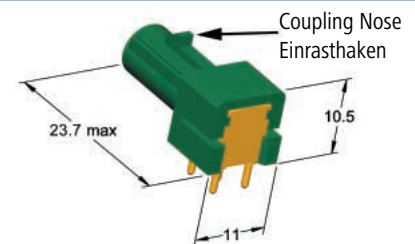
Part Number	Panel Piercing	Remarks
59 S 10A-400 F4-*	B30	Only for wave soldering technology/ Nur für Schwallöttechnik Other pin lengths on request/ Weitere Pin-Längen auf Anfrage



## Plug, 90° Angle

## Stecker, 90°-Winkel

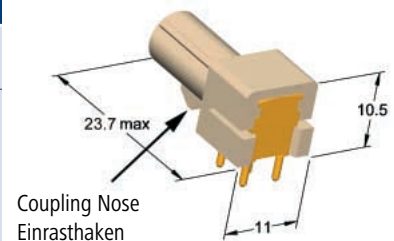
Part Number	Panel Piercing	Remarks
59 S 20B-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwallöttechnik



## Plug, 90° Angle

## Stecker, 90°-Winkel

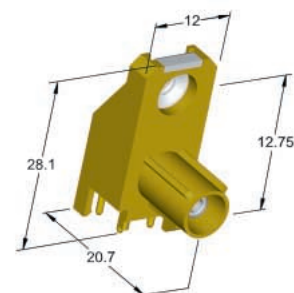
Part Number	Panel Piercing	Remarks
59 S 20E-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwallöttechnik
59 S 20H-400 A4-*	B30	Only for wave soldering technology/ Nur für Schwallöttechnik Case height 12.3/ Bauhöhe 12.3



## Plug, 90° Angle

## Stecker, 90°-Winkel

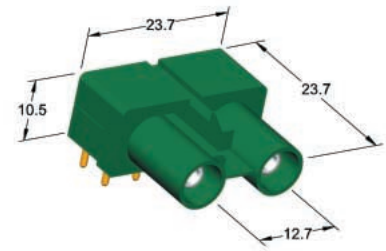
Part Number	Panel Piercing	Remarks
59 S 20N-400 A4-*	B133	Only for wave soldering technology/ Nur für Schwallöttechnik  Please use screw M 2.5 (self-cutting) for thread insert. Bitte Schraube M 2.5 (selbst- schneidend) für Gewindeinsatz verwenden.



## Twin Plug, 90° Angle

Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20C-400 A4-*	B30	12.7 mm	Only for wave soldering technology/ Nur für Schwallöttechnik

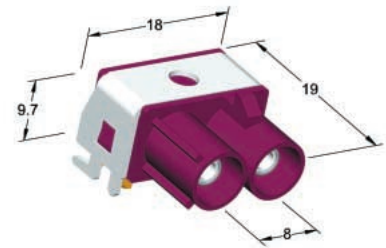
## Doppel-Stecker, 90°-Winkel



## Twin Plug

Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20J-400 A4-*	B119	8.0 mm	Only for wave soldering technology/ Nur für Schwallöttechnik
59 S 20K-400 A4-*	B119	8.0 mm	Only for wave soldering technology/ Nur für Schwallöttechnik Without clamp/ Ohne Haltebügel

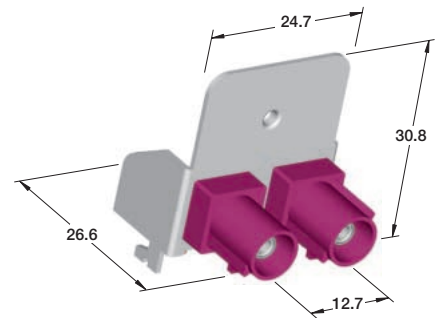
## Doppel-Stecker



## Twin Plug

Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20U-400 A4-*	B157	12.7 mm	Only for wave soldering technology/ Nur für Schwallöttechnik

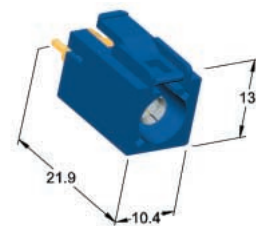
## Doppel-Stecker



## Jack, SMD Type

Part Number	Panel Piercing
59 K 23A-40M E4-*	B149, Footprint B150

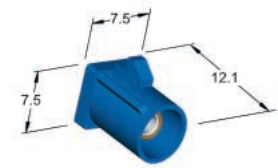
## Kuppler, SMD-Bauform



**Plug, SMD Type**

**Stecker, SMD-Bauform**

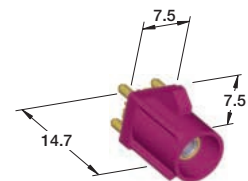
Part Number	Panel Piercing
59 S 10A-40M F4-*	Footprint B147



**Plug, SMD Type**

**Stecker, SMD-Bauform**

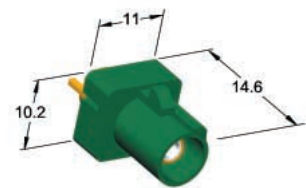
Part Number	Panel Piercing	Assembly Instruction	Remarks
59 S 10B-40M E4-*	Footprint B153	59 V 020	Pin-in-paste



**Plug, SMD Type**

**Stecker, SMD-Bauform**

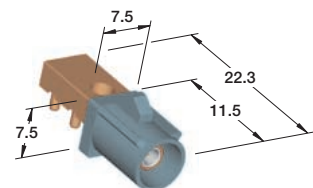
Part Number	Panel Piercing
59 S 20A-40M E4-*	B149, Footprint B150



**Plug, SMD Type**

**Stecker, SMD-Bauform**

Part Number	Panel Piercing	Assembly Instruction	Remarks
59 S 20N-40M E4-*	Footprint B160	59 V 021	Pin-in-paste

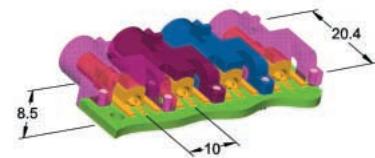
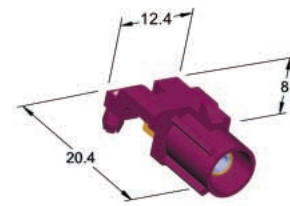




**Plug, 90° Angle, SMD Type**

**Stecker, 90°-Winkel, SMD-Bauform**

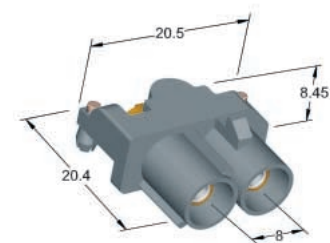
Part Number	Panel Piercing
59 S 20G-40M E4-*	B117 Anwendungen mit geradem Kabelabgang: 59 K 13D-102 A4-* (Seite 6)  Applications with straight cable separation: 59 K 13D-102 A4-* (page 6)
	Modular mounting possible/ modularer Aufbau möglich



**Twin Plug, SMD Type**

**Doppel-Stecker, SMD-Bauform**

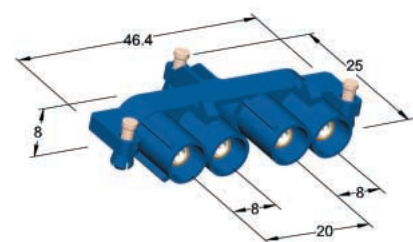
Part Number	Panel Piercing	Distance of contacts	Remarks
59 S 20J-40M L4-*	B 132	8.0 mm	Other coupling nose directions on request/ Bauformen mit anderen Einrasthaken-Positionen auf Anfrage



**Quadruple Plug, SMD Type**

**Vierfach-Stecker, SMD-Bauform**

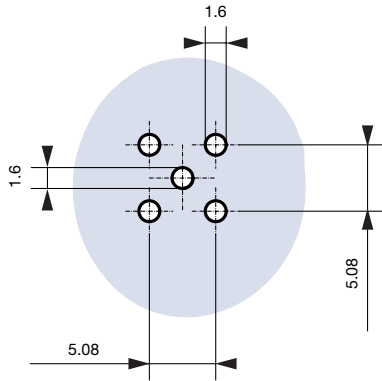
Part Number	Panel Piercing	Distance of contacts
59 S 20C-40M E4-*	B134	8.0 mm



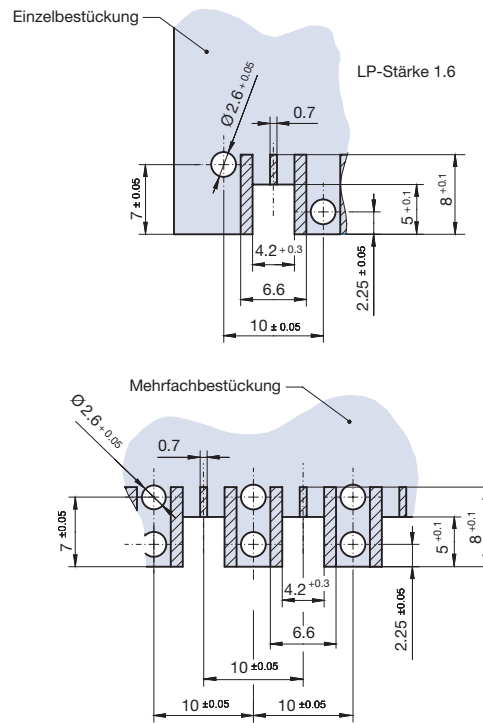
Status November 2002,  
minor adjustments possible

Stand November 2002,  
geringfügige Änderungen möglich

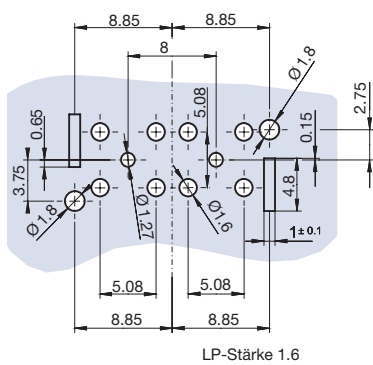
B30



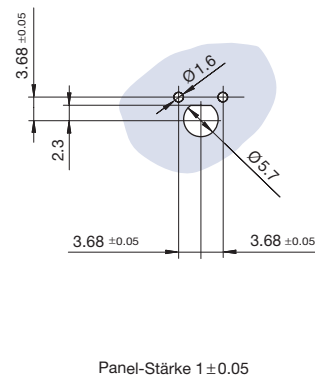
B117



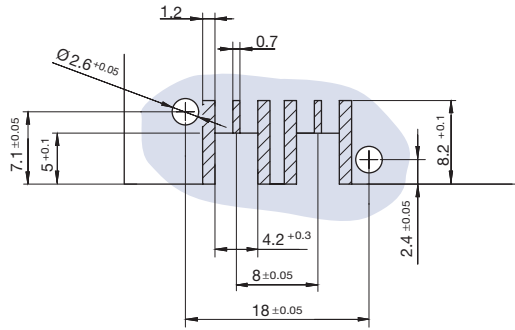
B119



B129

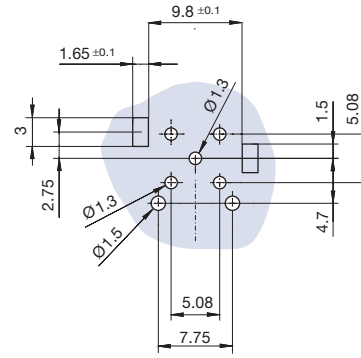


**B132**



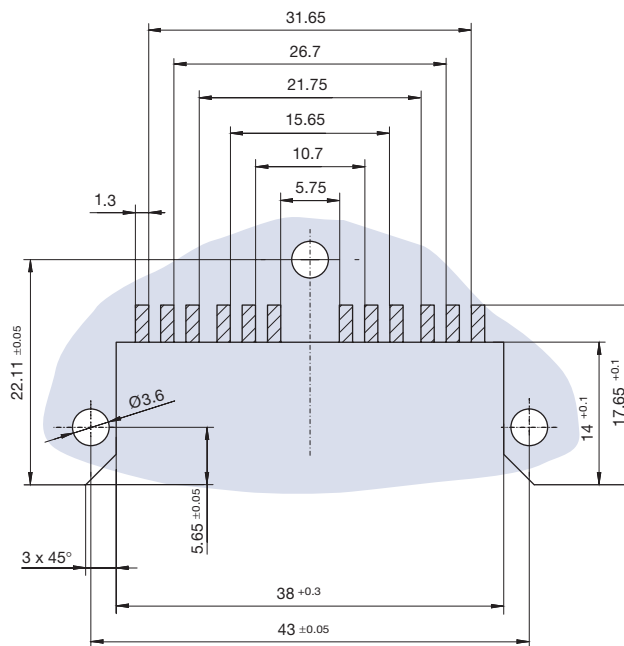
LP-Stärke 1.6

**B133**



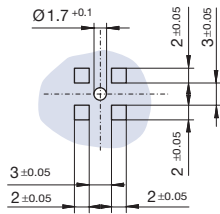
LP-Stärke 1.6

**B134**

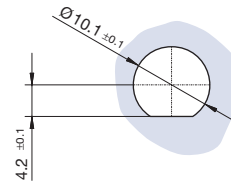


LP-Stärke 1.6

**Footprint B147**

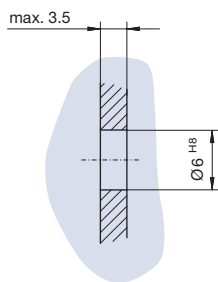


**B148**



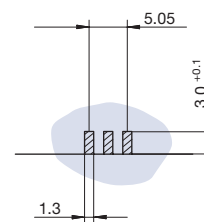
Panel-Stärke 3.2 max.

**B149**

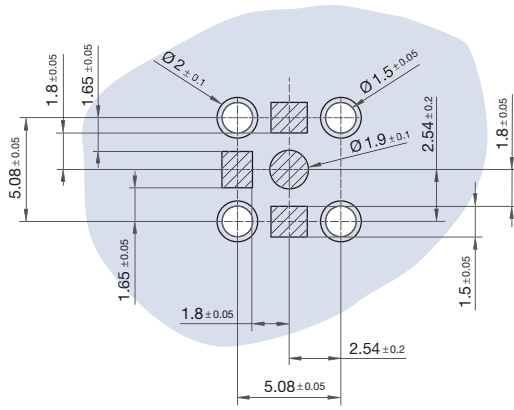


Montageloch in ALU-Rahmen

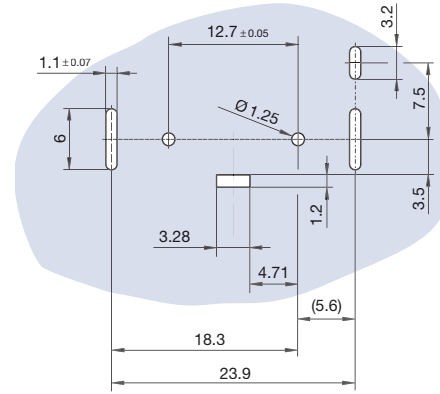
**Footprint B150**



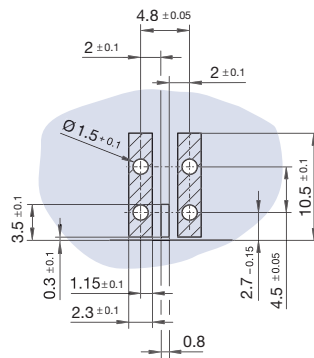
Footprint B153



Footprint B157



Footprint B160





**Rosenberger**

**Hochfrequenztechnik GmbH & Co.**

P.O.Box 1260  
D-84526 Tittmoning  
Tel: **+49-86 84-18-0**  
Fax: +49-86 84-184 99  
E-Mail: info@rosenberger.de  
sales@rosenberger.de  
Web: www.rosenberger.de

**Vertriebsbüro München**

Rotwandweg 5  
D-82024 Taufkirchen  
Tel: 00 49/89/6 14 17 30  
Fax: 00 49/89/6 14 09 54  
E-Mail: info@rosenberger.isar.de

**Vertriebsbüro Ost**

Heidestraße 70  
D-01454 Radeberg  
Tel: 00 49/35 28/46 24 61  
Fax: 00 49/35 28/46 24 62  
E-Mail: stecker\_radeberg@t-online.de

**Vertriebsbüro Nord**

WI-tronik  
Walter Wingenroth  
Alfred-Nobel-Straße 9  
D-57299 Burbach  
Tel: 00 49/27 36/44 70 06  
Fax: 00 49/27 36/44 70 07  
E-Mail: wi-tronik@t-online.de

**Vertrieb/Sales Automotive**

Heinrich-Heine-Weg 26  
D-24568 Kaltenkirchen  
Tel: 00 49/41 91/90 92 99  
Fax: 00 49/41 91/90 92 97  
E-Mail: jpfreundt.rosenberger@t-online.de

**Argentina**

Mercotel S.R.L.  
Viel 2079  
1424 Buenos Aires  
Tel: 00 54/11/49 21 46 20  
Fax: 00 54/11/49 24 59 52  
E-Mail: mercotel@interar.com.ar

**Australia and New Zealand**

Braemac Pty. Ltd.  
1/59-61 Burrows Road  
Alexandria, Sydney  
NSW 2015  
Tel: 00 61/2 9550 6600  
Fax: 00 61/2 9550 6377  
E-Mail: p.deluca@braemac.com.au

**Austria, Croatia, Czech Republic, Hungary, Slovakia, Slovenia**

Walter Krenn  
Hochfrequenztechnik GmbH  
Simmeringer Hauptstraße 421  
A-1110 Wien  
Tel: 00 43/1/7 48 71 17-0  
Fax: 00 43/1/7 48 71 17-90  
E-Mail: info@krenn.at

**Belgium**

Rosenberger Benelux B.V.  
Postbus 7  
NL-6675 ZG Valburg  
Tel: 00 31/48 84/7 01 17  
Fax: 00 31/48 84/7 01 77  
E-Mail: info@rosenberger.nl

**Brazil**

Rosenberger Domex Telecom  
Rua Miracema, 781  
Chacaras Reunidas  
Sao Jose dos Campos - SP  
CEP 12238-360  
Tel: 00 55/12/3 35 65 00  
Fax: 00 55/12/3 33 16 31  
E-Mail: vendas@domextelecom.com.br

**Canada**

DENICKX Komponentis Inc.  
17 Hardy Crescent  
Brockville, Ontario K6V-3A2  
Tel: 00 1/6 13/3 42 31 96  
Fax: 00 1/6 13/3 42 84 94  
E-Mail: denisk@denickx.ca

**Chile, Latin America**

Rosenberger Sudamerica Ltda.  
Av. Echenique 8009  
La Reina  
Santiago  
Tel: 00 56/2/2 75 29 08  
Fax: 00 56/2/2 75 13 16  
E-Mail: info@rosenberger.cl

**China**

Beijing Rosenberger  
Electronic Company, Ltd.  
No. 3, Anxiang Road, Block B  
Tianzhu Airport Industrial Zone  
Beijing 101300  
PR China  
Tel: 00 86/10/80 48 19 95  
Fax: 00 86/10/80 48 24 38  
E-Mail: info@rosenberger.com.cn

**Denmark**

Rosenberger Danmark A/S  
Toftebakken 5, Postboks 92  
DK-3460 Birkerød  
Tel: 00 45/45 82 07 40  
Fax: 00 45/45 81 03 94  
E-Mail: reception@rosenberger.dk

**Finland**

Dinlog OY  
Hakamäenkuja 7  
FIN-01510 Vantaa  
Tel: 00 3 58/9/27 09/20 10  
Fax: 00 3 58/9/27 09/20 19  
E-Mail: seppo.martikainen@dinlog.fi

**France**

Rosenberger France  
Actipark  
17, Rue des Frères Lumière  
F-67201 Eckbolsheim  
Tel: 00 33/3/90 20 76 00  
Fax: 00 33/3/90 20 76 01  
E-Mail: n\_dumontel@rosenberger.de

**India**

Chithra International  
476, 3A-Main Road  
2nd Stage, Indira Nagar  
Bangalore-560 038  
Tel: 00 91/80/5 25 83 10  
Fax: 00 91/80/5 25 11 21  
E-Mail: chithra@giabsg01.vsnl.net.in

**Indonesia**

PT Prima Mitratama Sejati  
Green Ville Blok BG No 26  
Jakarta Barat, 11510  
Indonesia  
Tel: 00 62/21/5 66 92 30  
Fax: 00 62/21/5 66 92 25  
E-Mail: prima@centrin.net.id

**Israel**

M.T.I Engineering Ltd.  
Afek Industrial Park  
11 Hamelacha St.  
48091 Rosh Ha'ayin  
Tel: 00 9 72/3/9 02 55 55  
Fax: 00 9 72/3/9 02 55 56  
E-Mail: info@mti-group.co.il  
www.mti-group.com

**Italy**

Rosenberger Italia S.R.L.  
Via Chiasserini, 15  
I-20157 Milano  
Tel: 00 39/02/39 09 62 04  
Fax: 00 39/02/3 57 07 74  
E-Mail: info@rosenberger.it

**Japan**

Fusoh Shoji Co., Ltd.  
No. 10 - 2, 2-Chome  
Nagata-Cho, Chiyoda-Ku  
Tokyo 100-0014  
Tel: 00 81/3/35 81 90 56  
Fax: 00 81/3/35 81 57 09  
E-Mail: info@fusoh.co.jp

**Mexico**

MESA  
Medición y Electronica S.A.  
Americas no. 43  
Col. Moderna  
Mexico, D.F.  
C.P. 03510  
Mexico  
Tel: 00 52/5 579 9555  
Fax: 00 52/5 579 0826  
E-Mail: rhernandez@gpoelec.com.mx

**Netherlands**

Rosenberger Benelux B.V.  
Postbus 7  
NL-6675 ZG Valburg  
Tel: 00 31/48 84/7 01 17  
Fax: 00 31/48 84/7 01 77  
E-Mail: info@rosenberger.nl

**Norway**

T&G Elektro A/S  
P.O. Box 85  
Terrassevn. 6  
N-1321 Stabekk  
Tel: 00 47/67/12 90 50  
Fax: 00 47/67/12 90 60  
E-Mail: epost@tgelektro.no

**Poland**

PTH meopta  
UL. Wlodkovicza 14  
PL-60-334 Poznan  
Tel: 00 48/61/8 62 16 80  
Fax: 00 48/61/6 62 48 52  
E-Mail: meopta@gmx.net

**Singapore**

Rosenberger RF Technology Pte. Ltd.  
16 Ayer Rajah Crescent #03-04  
Singapore 139965  
Tel: 00 65/67 74 84 39  
Fax: 00 65/67 74 84 54  
E-Mail: sales@rosenberger.com.sg

**South Africa**

Connecta PL  
P.O. Box 98616  
Sloane Park 2152  
RSA-Johannisburg  
Tel: 00 27/11/4 63 22 40  
Fax: 00 27/11/4 63 15 90  
E-Mail: colin@connecta.co.za

**Spain**

Rosenberger Telecom, S.A.  
Berlin, 4 Of. 2  
E-28224 Pozuelo de Alarcón  
Tel: 00 34/91/3 52 83 52  
Fax: 00 34/91/3 52 98 13  
E-Mail: rosenberger@epirsa.com

**Sweden**

Rosenberger Carlberg AB  
Batsmansvägen 8  
S-181 10 Lidingö  
Tel: 00 46/8/6 36 26 00  
Fax: 00 46/8/6 36 26 26  
E-Mail: info@carlberg.se

**Switzerland**

EME AG  
Interconnection & Motion  
Lohwisstrasse 50  
CH-8123 Ebmatingen  
Tel: 00 41/1/9 82 11 11  
Fax: 00 41/1/9 82 11 33  
E-Mail: info@eme.ch

**Taiwan R.O.C.**

JIMCOM CO LTD  
11F, No 206, Sec 1, Fu Hsing S Rd  
Taipei, 106  
Taiwan  
Tel: 00 8 86/2/27 81-30 28  
Fax: 00 8 86/2/27 81-13 76  
E-Mail: jimcom@ms19.hinet.net

**Thailand, Laos, Cambodia**

Matrix Business Co., Ltd.  
201 Petchkasem 2  
Petchkasem Road  
Thapha Bangkokyai  
Bangkok 10600  
Thailand  
Tel: 00 66/2/8 91 89 19  
Fax: 00 66/2/8 91 72 17  
E-Mail: matrixb@loxinfo.co.th

**Turkey**

Norana Dis Ticaret  
ve Mümessillik Ltd. Sti.  
Atatürk Caddesi 206/1, Derya Apt.  
TR-35220 Birinci Kordon, Izmir  
Tel: 00 90/2 32/4 64 00 11  
Fax: 00 90/2 32/ 4 63 06 73  
E-Mail: info@norana.com.tr

**United Kingdom**

Rosenberger Micro-Coax  
2b Mercury House  
Calleva Park, Aldermaston  
GB-Berkshire RG7 8PN  
Tel: 00 44/1 18/9 81 00 23  
Fax: 00 44/1 18/9 81 61 80  
E-Mail: sales@rmcoax.com

**USA**

Rosenberger of North America  
Greenfield Corporate Center  
P.O. Box 10113  
USA-Lancaster, PA 17605-0113  
Tel: 001/717/290 8000  
Fax: 001/717/399 9885  
E-Mail: parker@rosenbergerna.com

While the information has been carefully compiled to the best of our knowledge, nothing is intended as representation or warranty on our part and no statement herein shall be construed as recommendation to infringe existing patents.

**Rosenberger**  
Hochfrequenztechnik GmbH & Co.

P.O.Box 1260  
D-84526 Tittmoning  
Tel: +49 - 86 84 -18-0  
Fax: +49 - 86 84 -18-499

E-Mail: [info@rosenberger.de](mailto:info@rosenberger.de)  
Web: [www.rosenberger.de](http://www.rosenberger.de)

---

Ordering No.  
Info201Auto5.0/12-02  
pA: 135543

© 11.2002 Rosenberger  
Production Thewald Kommunikation  
Printed in Germany